

REMARKS/ARGUMENTS

Independent Claim 1 has been amended to further clarify the claimed invention over the cited art. Specifically, Claim 1 has been amended to recite that the binder fixes the fibers to one another. Support for this amendment can be found, for example, at page 3, lines 15 – 16 of the present specification.

Claims 1 – 5, 7, 26, and 27 have been rejected under 35 U.S.C. § 102(b) as being anticipated by, or alternatively under § 103(a) as being unpatentable over U.S. Patent No. 5,439,627 to De Jager. Claims 8 – 10 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over De Jager.

De Jager describes a reinforced composite having fibers which are spaced from each other by means of uniformly distributed particles and that are bonded by means of a flexible binder. See column 3, lines 51 – 53. De Jager repeatedly emphasizes that it is important that the fibers do not contact each other and that an object of the invention is to avoid clustered fibers in the preform. See for example, column 2, lines 35 – 37 and 63 – 65. De Jager further states that it “[i]t is an essential feature of the invention that the green tape, ribbon, sheet or cloth comprising a number of continuous longitudinally oriented fibers or filaments which are spaced from each other by means of a dosed amount of uniformly distributed particle material(s) of tailored/predetermined size....” See column 4, lines 8 – 13.

In contrast to De Jager, the fibers of the claimed invention are fixed to one another and are not spaced apart from each other by uniformly distributed particles. As a result, the fibers of the claimed invention are bonded directly to one another. This structure is different than the structure described in De Jager. Thus, De Jager fails to disclose the claimed invention.

Further, one of ordinary skill in the art would not be motivated to modify De Jager to fix the fibers to one another, as recited in Claim 1. De Jager repeatedly emphasizes the importance of maintaining the space between the filaments. For example, at column 2, lines 41-50, De Jager states that a common problem encounter in usual performs produced from fiber products, “is that is that the matrix cannot infiltrate sufficiently and homogeneously in between the bundles and the monofilaments of the reinforcement fibers. The interstitial space within the fiber bundles is often much smaller than the spaces between the fiber bundles used to produce the preform, and

the rate of bundles infiltration relative to the preform infiltration become insufficient.” De Jager teaches that the use of uniformly distributed particles prevents the fibers from contacting each other. Thus, De Jager clearly teaches that it is undesirable to have the fibers bonded directly to each other. Therefore, one of ordinary skill in the art would not be motivated to modify De Jager to fix the fibers to one another. Accordingly, Claim 1, and any claims dependent thereon are patentable over the cited reference.

The Office Action alleges that the density ranges recited in Claim 8 and 9 would have been obvious based on the teachings of De Jager. The Examiner’s assertion assumes that the structure described in De Jager is the same as the structure recited in the claims—this is not the case. The claimed structure is clearly different than the structure described in De Jager. As a result, the densities to achieve a desired end would also therefore be different. Moreover, the mere fact that the De Jager necessarily includes spacer particles would result in the structures having different densities. For instance, Example 1 of De Jager describes a composite having 20 vol% spacer particles. As a result, the recited densities of the claimed invention and that of De Jager would necessarily be different, irrespective of the end use or desired property. Thus, the De Jager does not suggest the density ranges recited in Claims 8 and 9.

The Office Action further alleges that the amount of the binder in the present invention amounts to no more than routine optimization. However, the amount of the binder recited in the Claim 10 would not have been obvious from the prior art of record, and the Office Action has not shown that the prior art teaches the binder content recited in Claim 10. This is not a case of finding optimum values within a range of values taught by the prior art, which was the situation in *In re Boesch*. The amount of binder present in De Jager would necessarily have to be high because of the presence of the spacer particles. As discussed above, Example 1 includes 20 vol% spacer particles that prevent each fiber from contacting adjacent fibers. In contrast, the claimed invention does not include spacer particles. As a result, the amount of binder that is necessary to fill in the void spaces between the fibers of De Jager is necessarily greater than the amount of binder recited in Claim 10. Further, there is no expectation that a binder content of 20 wt% would even be sufficient to fill in the spaces between the fibers of De Jager. Thus, one of ordinary skill in the art would not be motivated to modify De Jager to have the recited binder

content because the structure described in De Jager is different than the structure recited in the claims.

Furthermore, the underlying assumption -- i.e., that the amount of binder affects the bond strength, toughness, and flexibility -- is erroneous. Such properties are dependent upon many factors, for example, the amount of spacer particles in the composite, the type of fibers and their respective sizes. There is no teaching in the cited references that the amount of binder would have any effect on such. Therefore, there is no direct correlation between the amount of binder and the properties cited by the Examiner, and it cannot be said that the amount of binder in the composite is routine optimization.

Because the cited reference fails to suggest or disclose the invention, the Office Action has failed to establish a *prima facie* case of obviousness and the pending rejections under 35 U.S.C. § 102 and 103 should be withdrawn.

Conclusion

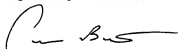
In view of the amendments and remarks made above, Applicant submits that the pending claims are in condition for allowance. Applicant respectfully requests that the claims be allowed to issue. If the Examiner wishes to discuss the application or the comments herein, the Examiner is urged to contact the undersigned attorney by telephone at 704-444-1185 to expedite prosecution of this application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required

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therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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